Amendments (Clean copy)

In response to the above mentioned Office action please amend the application as follows:

In the Claims

1. **(TWICE AMENDED)** A method for forming a giant magnetoresistive (GMR) sensor element comprising:

forming a seed layer over a substrate,

forming a metal oxide buffer layer over the seed layer; said metal oxide buffer layer comprised of NiO or alpha Fe_2O_3;

forming a free ferromagnetic layer over said metal oxide buffer layer; said free ferromagnetic layer is comprised of: CoFe, CoFe/NiFe, or Co/NiFe;

forming a non-magnetic conductor spacer layer over said free ferromagnetic layer;

forming a pinned ferromagnetic layer over the non-magnetic conductor spacer layer ; and

forming a pinning material layer over the pinned ferromagnetic layer; and

forming a capping layer over said pinning material layer.

14. **(AMENDED)** The method of claim 1 wherein the giant magnetoresistive (GMR) sensor element is selected from the group consisting of simple spin valve magnetoresistive (SVMR) sensor elements, synthetic antiferromagnetically biased giant magnetoresistive (GMR) sensor elements, simple spin filter giant magnetoresistive (GMR) sensor elements and spin filter synthetic antiferromagnetically biased giant magnetoresistive (GMR) sensor elements.

8. **(TWICE AMENDED)** The method of claim 1 wherein said free ferromagnetic layer has a thickness of 20 to 30 Å.

15. (AMENDED) A method for forming a spin filter giant magnetoresistive (GMR) sensor element comprising:

forming a seed layer over a substrate, said seed layer being formed of a magnetoresistive resistivity sensitivity enhancing material selected from the group consisting of nickel chromium alloys, nickel -chromium-copper alloys and nickel-iron-chromium alloys;

forming a metal oxide buffer layer over the seed layer; said metal oxide buffer layer comprised of NiO or alpha Fe_2O_3 ;

forming a high conductivity layer on said metal oxide layer;

forming a free ferromagnetic layer over said high conductivity layer; said free ferromagnetic layer is comprised of: CoFe, CoFe/NiFe, or Co/NiFe;

forming a non-magnetic conductor spacer layer over said free ferromagnetic layer;

forming a pinned ferromagnetic layer over the non-magnetic conductor spacer layer ; and

forming a pinning material layer over the pinned ferromagnetic layer;

forming a capping layer over said pinning material layer.

18. (AMENDED) A spin valve giant magnetoresistance (SVGMR) sensor comprising:

a seed layer over a substrate,

a metal oxide buffer layer over the seed layer; said metal oxide buffer layer comprised of NiO or alpha Fe_2O_3;

a free ferromagnetic layer over said metal oxide buffer layer; said free ferromagnetic layer is comprised of: CoFe, CoFe/NiFe, Co/NiFe;

a non-magnetic conductor spacer layer over said free ferromagnetic layer;

a pinned ferromagnetic layer over the non-magnetic conductor spacer layer ; and

a pinning material layer over the pinned ferromagnetic layer; and

a capping layer over said pinning material layer.

25. (TWICE AMENDED) The spin valve giant magnetoresistance sensor of claim 18 wherein said free ferromagnetic layer has a thickness of 20 to 30 Å.

Please add new claims as follows:

31. The method of claim 1 which further includes said seed layer being formed of a magnetoresistive resistivity sensitivity enhancing material selected from the group consisting of nickel chromium alloys, nickel -chromium-copper alloys and nickel-iron-chromium alloys.

32. The spin valve giant magnetoresistance sensor of claim 18 wherein said seed layer being formed of a magnetoresistive resistivity sensitivity enhancing material selected from the group consisting of nickel chromium alloys, nickel -chromium-copper alloys and nickel-iron-chromium alloys.

33. A method for forming a giant magnetoresistive (GMR) sensor element comprising:

forming a seed layer over a substrate,;

forming a metal oxide buffer layer over the seed layer; said metal oxide buffer layer comprised of NiO or alpha Fe_2O_3;

forming a free ferromagnetic layer over said metal oxide buffer layer; said metal oxide buffer layer is comprised of an metal oxide having a crystal lattice constant that is close to said free ferromagnetic layer's crystal lattice constant and has the same crystal structure as said free ferromagnetic layer's crystal lattice structure;

forming a non-magnetic conductor spacer layer over said free ferromagnetic layer;

forming a pinned ferromagnetic layer over the non-magnetic conductor spacer layer ; and

forming a pinning material layer over the pinned ferromagnetic layer; and

forming a capping layer over said pinning material layer.